

# **Mechatronics/ Robotics**

## **Course Number: 21009**

### **Rational Statement:**

Mechatronics is the new industrial discipline for understanding how complex systems integrate various elements in the mechanical, fluid power, and controls domain, combined with the ability to work in a team environment with people of different areas of expertise.

**Suggested Grade Level:** 9-12

### **Topics Covered:**

- Fluid power
- Basic motor controls
- Robotics and automation
- Security
- Circuit design
- Mechanical systems
- Mechatronics
- Career Possibilities

### **Core Technical Standards & Examples**

<b>Indicator 1: Classify equipment in the chosen topic area(s).</b>	
<b>Bloom's Taxonomy Level</b>	<b>Standard and Example</b>
Evaluation	<b>RBTMT1.1. Demonstrate knowledge of equipment used in topic area(s)</b>  Examples: <ul style="list-style-type: none"><li>• Identify type of equipment used in topic area(s)</li><li>• List industry applications</li></ul>
Analysis	<b>RBTMT1.2. Examine the systems relationships</b>  Examples <ul style="list-style-type: none"><li>• Identify subsystems</li><li>• Explain purpose of subsystems</li></ul>

<b>Indicator 2: Access and demonstrate safety proficiency in topic area(s).</b>	
<b>Bloom's Taxonomy Level</b>	<b>Standard and Example</b>
Evaluation	<b>RBTMT2.1. Demonstrate proper safety procedures</b>  Examples: <ul style="list-style-type: none"><li>• Operate and use proper personal protective equipment</li><li>• Observe all safety rules</li></ul>

Evaluation	<b>RBTMT2.2. Determine how to apply Lockout – Tag-out procedure</b>  Examples: <ul style="list-style-type: none"> <li>• Examine process</li> <li>• List hazard areas</li> </ul>
Evaluation	<b>RBTMT2.3. Classify Materials Safety Data Sheet (MSDS)</b>  Examples: <ul style="list-style-type: none"> <li>• Prepare labels and material safety data sheets (MSDS) to convey the hazard information.</li> <li>• Handle all chemicals appropriately.</li> </ul>

<b>Indicator 3: Construct, analyze and troubleshoot circuits.</b>	
<b>Bloom's Taxonomy Level</b>	<b>Standard and Example</b>
Synthesis	<b>RBTMT3.1. Build circuit according to schematic diagram</b>  Examples: <ul style="list-style-type: none"> <li>• Chose proper components</li> <li>• Assemble circuit in accordance with schematic diagram</li> </ul>
Application	<b>RBTMT3.2. Calculate circuit parameters</b>  Examples: <ul style="list-style-type: none"> <li>• Employ correct formula or law to solve for unknown parameters</li> <li>• Record calculated parameters using proper measurement parameters</li> </ul>
Evaluation	<b>RBTMT3.3. Measure circuits parameters</b>  Examples: <ul style="list-style-type: none"> <li>• Select and use proper test equipment to measure required parameters</li> <li>• Record calculated parameters using proper measurement parameters</li> </ul>
Evaluation	<b>RBTMT3.4. Compare calculated and measured solutions to analyze circuit operation</b>  Examples: <ul style="list-style-type: none"> <li>• Graph calculated and measured parameters</li> <li>• Compare parameters to determine if they are within circuit parameters</li> <li>• Inspect circuit operation</li> </ul>
Analysis	<b>RBTMT3.5 Examine Proper Terminology and Career Possibilities</b>  Examples: <ul style="list-style-type: none"> <li>• Prepare a report about the area of study</li> <li>• Design a questionnaire for an interview</li> <li>• Write a biography about a historic person in the field</li> </ul>